

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : BOX PATENT APPLICATION

Isabelle HARTER et al. : Examiner: Unassigned

Serial No.: Unassigned : Group Art Unit: Unassigned

Filed: April 17, 2001 :

For: POLYFUNCTIONAL SUB-ASSEMBLY FOR CONTACT, MATERIAL
DISTRIBUTION AND HEAT AND/OR MATERIAL EXCHANGE OF AT LEAST
ONE GAS PHASE AND AT LEAST ONE LIQUID PHASE

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, Applicants wish to amend the above-identified application as indicated below:

IN THE ABSTRACT

Please delete the existing Abstract and replace with the attached Abstract of the Disclosure.

IN THE CLAIMS

Please amend the claims as follows:

Please cancel claims 6-13 without prejudice or disclaimer.

Please add the following claims:

- 14. A sub-assembly according to claim 1, in which the downcomer comprises at least two cross sections of flow (2) of the liquid phase located at different levels above the distributor tray (P) and below the cross section of flow (22) closest to said distributor tray (P).

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15. A sub-assembly according to claim 1, in which the cross sections of flow of the liquid phase are apertures of any shape and/or slots.

16. A sub-assembly according to claim 1, in which the cross section of flow (2) of the liquid phase closest to the distributor tray (P) is located at a sufficient distance from said tray (P) for a level of liquid to be established above said tray (P).

17. A sub-assembly according to claim 1, in which the downcomer comprises a portion above the distributor tray (P) and a portion below the distributor tray (P).

18. A vessel comprising an upper part and a lower part, an inlet in communication with the upper part for a first liquid fluid and for a second gaseous fluid, at least one bed of granular solids in the interior of said vessel, mounted above said bed a sub-assembly according to claim 1, and above said sub-assembly, said vessel comprising at least one side inlet for a third fluid, which may be identical to or different from said first or second fluid.

19. A vessel according to claim 18, in which said third fluid is a fluid for heat exchange and/or material exchange with at least one of said first or second fluids.

20. A vessel according to claim 18, for carrying out a catalytic reaction in which the bed (or beds) of granular solid is a catalyst bed.

21. A vessel according to claim 18, for carrying out a catalytic reaction in which one of the reactants is hydrogen.

22. A vessel according to claim 18, wherein said third fluid is a gas.

REMARKS

New claims 14-21 substantially mirror canceled multiply dependent claims 6-13, thereby saving fees and facilitating examination. Applicants reserve the right to reintroduce claims to canceled combined subject matter. New claim 22 is directed to a preferred aspect of original claim 10.

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ABSTRACT OF THE DISCLOSURE

A sub-assembly is described that ensures contact, material distribution and heat and/or material exchange of at least one gas phase, at least a portion of which is hydrogen, and at least one liquid phase, for a vessel containing at least one bed of granular solid, said phases being in overall downflow mode and traversing said bed of granular solid, said sub-assembly comprising at least one distributor tray (P) located above the bed of granular solid, comprising a plurality of downcomers (1) each surmounted by at least one jet disturber device and each having in its upper portion at least one cross section of flow (22) for entry of the major portion of said gas phase into said downcomer and, between said upper portion and the lower portion of said downcomer above tray (P), at least one cross section of flow (2) for entry of the major portion of said liquid phase into said downcomer, and in its lower portion at least one cross section of flow (23) of the mixture formed in the downcomer for distributing it over the bed of granular solid located below said lower portion, each downcomer containing at least one packing extending across the whole of the transverse cross section of the downcomer between its upper portion and its lower portion in the circulation zone, constituted by cells through which said liquid and said gas phase pass, said cells orientating the circulation of fluids inside said downcomer in a substantially radial direction.

Version With Markings To Show Changes Made

IN THE ABSTRACT

The abstract has been replaced with a new Abstract of the Disclosure, therefore no marked-up version is necessary.

IN THE CLAIMS

Claims 6-13 have been canceled.

Claims 14-22 have been added, therefore no marked-up version is necessary.

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